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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/783,550 | 02/20/2004 | Jenn-Wen Huang | DEE-PT140 | 7463 |

3624 7590 11/28/2005

VOLPE AND KOENIG, P.C.
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

| EXAMINER | |
|---|---|
| KINNEY, ANNA L | |
| **ART UNIT** | **PAPER NUMBER** |
| 1731 | |

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/783,550 | HUANG ET AL. | |
| | Examiner | Art Unit | |
| | Anna Kinney | 1731 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of Invention I, corresponding to claims 1-19, in the reply filed on November 2, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Specification*

The disclosure is objected to because of the following informalities: The specification contains numerous typographical errors. For instance, on page 3, ¶ 0005, line 2, a space is missing before the word "and", and on line 5, the word "came" is unnecessary. The Examiner suggests that the applicant review the specification for further corrections.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

Claims 4, 11, 12, 13, 18, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4, 11-13, 18, and 19 all contain ranges using a "~" character. The Examiner cannot determine whether the applicant intends this to mean that the range is from the low value to the high value, from the low value to about the high value, or from about the low value to about the high value. For purposes of examination, the Examiner considered these ranges to indicate the latter.

Claim 4 contains a percentage range limitation, but does not recite the basis for this percentage. The Examiner suggests that the applicant specify whether the ratio in question is on a weight or volume basis.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 6, 9, 10, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar (U.S. Patent 6,402,887).

Akhtar discloses a production method for a paper pulp (col. 1, lines 7-10), comprising steps of: (a) providing a culture solution (col. 6, lines 21-27); (b) adding a fiber plant into said culture solution (col. 6,lines 25-27); (c) adding a suspension of a microorganism into said culture solution (col. 6, lines 21-27 and 46-47); (d) fermentatively culturing said culture solution for preparing a pulp solution (col. 6, lines 60-61); (e) boiling (e.g., steaming) said pulp solution (col. 11, lines 37-39); (f) pulping said pulp solution (col. 7, lines 34-43); and (g) screening said pulp solution for isolating a paper pulp from said pulp solution (col. 9, lines 31-37). Although Akhtar does not disclose expressly boiling the pulp solution, Akhtar does disclose steaming the pulp solution as described above, and also that the pulp solution may be pulped using a kraft process (col. 7, lines 34-43), operated at 171°C (col. 9, lines 28-32), significantly higher than the boiling temperature at standard atmospheric pressure.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that the pulp solution would boil in the steps of steaming and cooking the pulp.

With respect to claim 3, Akhtar discloses that said fiber plant is pretreated by a steaming treatment under a relatively high temperature (col. 5, line 59 to col. 6, line 14).

With respect to claim 6, Akhtar does not disclose expressly that said microorganism is inoculated at a concentration ranged from 0 to $10^8$ cfu/ml. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the amount of microorganism used to obtain the desired results. Furthermore, the wide range claimed indicates a lack of criticality.

With respect to claim 9, Akhtar discloses that the fermentatively culturing process is proceeded at a temperature range of about 22°C to about 32°C, preferably about 27°C, which contains three specific points (22, 27, 32) within the claimed range of from 20 to 50°C.

With respect to claim 10, Akhtar discloses that the fermentatively culturing process is one of a static culture and a shaking culture (col. 6, lines 60-65; col. 8, lines 49-50).

With respect to claim 11, Akhtar discloses that the fermentatively culturing process is proceeded over about 1 to 4 weeks (col. 7, lines 23-33), which contains one specific point (1 wk. = 7 days) within the claimed range of 0~10 days.

With respect to claim 13, Akhtar discloses that the pulp solution is screened through 0.203 mm wide slots, which contains one specific point (0.203 mm is between No. 70 and 80 mesh) within the claimed range of 18~300 meshes.

Claims 2, 12, 14-16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar as applied to claim 1 above, and further in view of Sweeney (U.S. Patent 1,639,152).

Akhtar does not disclose expressly that the plant is a non-woody fiber plant, nor that CaO is added to the pulp.

With respect to claim 2, Sweeney discloses that said fiber plant is a non-woody fiber plant (col. 1, lines 19-38).

With respect to claims 12 and 18, Sweeney discloses a step of adding CaO (e.g., lime) into said pulp solution and boiling (e.g., cooked in an auto-clave) said pulp solution (col. 2, lines 74-83). Sweeney does not disclose expressly the amount of CaO, or the time or temperature at which the step occurs. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the CaO addition and cook to achieve the desired pulp properties.

With respect to claim 14, Akhtar discloses a biopulping method, and is applied as in the rejection of claim 1, above. Akhtar does not disclose expressly that this method is used for a non-woody fiber plant.

Sweeney discloses using a non-woody fiber plant (col. 1,lines 19-38).

With respect to claims 15, 16, and 19, Akhtar is applied as in the rejections to claims 3, 6, and 13, above.

Akhtar and Sweeney are analogous art because they are both from the same field of endeavor, that of biopulping lignocellulosic material.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a non-wood furnish and to add CaO to the pulp as described by Sweeney to the biopulping method of Akhtar to obtain the invention as specified in claims 2, 12, 14-16, 18, and 19.

The motivation would have been to produce products with a minimum amount of simple and inexpensive apparatus (col. 68-73), and to cause a more complete disintegration of the mass in less time than is required without CaO (col. 2, lines 74-83).

Claims 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar as applied to claim 1 above, and further in view of Schulein et al (U.S. Patent 6,387,690).

Akhtar does not disclose expressly that the microorganism is a bacterium nor that it is isolated from a non-wood plant or excrement compost.

With respect to claim 5, Schulein et al discloses that said microorganism is isolated from a non-woody fiber plant (col. 24, line 20 – col. 28, line 62).

With respect to claims 7 and 8, Schulein et al discloses that said microorganism is a Gram positive bacterium selected from a group consisting of a Bacillus licheniformis, a Bacillus subtilis and a Bacillus amyloliquefaciens (col. 22, lines 37-47).

Akhtar and Schulein et al are analogous art because they are both from a similar field of endeavor, that of treating lignocellulosic material with enzymes to produce a paper product.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the microorganism as described by Schulein et al in the biopulping method of Akhtar.

The motivation would have been improved energy savings (col. 42,lines 49-61) and improved fibre properties (col. 42, line 62 – col. 43, line 29).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar and Sweeney as applied to claim 14 above, and further in view of Schulein et al.

Akhtar and Sweeney do not disclose expressly that the microorganism is selected from the claimed group.

Schulein et al discloses that the microorganism is selected from a group consisting of a Bacillus licheniformis, a Bacillus subtilis and a Bacillus amyloliquefaciens.

Schulein et al, Akhtar, and Sweeney are analogous art because they are both from a similar field of endeavor, that of treating lignocellulosic material with enzymes to produce a paper product.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a microorganism as described by Schulein et al in the biopulping method of Akhtar and Sweeney.

The motivation would have been improved energy savings (col. 42,lines 49-61) and improved fibre properties (col. 42, line 62 – col. 43, line 29).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akhtar as applied to claim 1 above, and further in view of Blanchette et al (U.S. Patent 5,427,945).

Akhtar does not disclose expressly that the plant is added into solution by a ration of 4~15%.

Blanchette discloses that fiber plant is added into said culture solution by a ratio (e.g. consistency) of at least 7%, more preferably at least 9%, and desirably at least 12% (col. 5, lines 22-46), which contains three specific points within the claimed range of 4~15%.

Akhtar and Blanchette et al are analogous art because they are both from a similar field of endeavor, that of treating lignocellulosic material with enzymes to produce a paper product.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the consistency of Blanchette et al in the biopulping process of Akhtar.

The motivation would have been that it has been independently found particularly effective to employ microorganisms in systems in which the pulp consistency is in the medium to high range (col. 5, lines 30-46).

***Double Patenting***

Applicant is advised that should claim 12 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3, 6, 8, 9, 11-16, 18, and 19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim claims 2-10, 15, and 16 of copending Application No. 10/783,912 in view of Akhtar.

Claim 1, steps (a) through (e) and (g), are disclosed by '912 claims 2 or 15 and 8, 9, and 10. The step of pulping (f) is disclosed by Akhtar (col. 7, lines 34-43).

The non-wood furnish of claim 2 is fully encompassed by '912 claims 2 or 16.

The pretreatment of claims 3 and 15 are fully encompassed by '912 claim 3.

The microorganism concentration of claims 6 and 16 are fully encompassed by '912 claim 5.

The microorganisms of claim 8 are fully encompassed by '912 claim 4.

The temperature range of claim 9 is fully encompassed by '912 claim 6.

The time range of claim 11 is fully encompassed by '912 claim 7.

The CaO concentration, time, and temperature of claims 12 and 18 are fully encompassed by '912 claims 8 and 9.

The mesh range of claims 13 and 19 are fully encompassed by '912 claim 10.

Claim 14, steps (a) through (e) and (g), are disclosed by '912 claims 2 or 15 and 16 and claims 8, 9, and 10. The step of pulping (f) is disclosed by Akhtar (col. 7, lines 34-43).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1 and 14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of copending

Application No. 10/785,884. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 2 of '884 fully encompasses instant claims 1 and 14.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ALK

**SEAN VINCENT**
**PRIMARY EXAMINER**